

**WHAT IS CLAIMED IS:**

1. A plasma display panel (PDP) image display method comprising:

dividing an image of each frame displayed on a PDP  
5 corresponding to an input video signal into a plurality of subfields, each subfield  
corresponding to a bit that represents one of a plurality of luminance weights,  
the subfields including first and second subfield groups, and a number of the  
subfields included in the second subfield group being greater than a number of  
the subfields included in the first subfield group;

10 combining the luminance weights of the subfields; and  
displaying gray,

wherein at least one of the subfields, which is used for forming  
low gray, is included in the second subfield group, and

wherein a start point of the second subfield group is varied  
15 according to a load ratio of the input video signal.

2. The PDP image display method of claim 1, wherein the second  
subfield group is applied after the first subfield group in each frame.

20 3. The PDP image display method of claim 1, wherein the luminance  
weights of said at least one of the subfields used for forming low gray  
correspond to least significant bit (LSB) and LSB+1, respectively .

4. The PDP image display method of claim 3, wherein said at least one

of the subfields used for forming low gray is positioned at the start point of the second subfield group.

5           5. The PDP image display method of claim 1, wherein the start point of the second subfield group in a first case precedes the start point of the second subfield group in a second case, where the load ratio in the first case is greater than the load ratio in the second case.

10           6. The PDP image display method of claim 1, wherein an occupation time of the first subfield group includes a suspension time of the first subfield group, and varies according to the load ratio.

            7. The PDP image display method of claim 6, wherein the occupation time of the first subfield group reduces as the load ratio increases.

15           8.     A plasma display panel (PDP) image display method for dividing an image of each frame displayed on a PDP corresponding to an input video signal into a plurality of subfields, combining luminance weights of the subfields, and displaying gray, comprising:

20                     determining whether the input video signal is a PAL signal;

                          if the input video signal is the PAL signal:

                                  generating subfield data and address data corresponding to the input video signal;

                                  producing a number of sustain pulses based on a load

ratio of the input video signal;

determining a start point of each subfield; and

generating a control signal for a subfield arrangement configuration based on the number of sustain pulses and the start point of each subfield; and

applying the generated subfield data, the address data, and the control signal for the subfield arrangement configuration to the PDP,

wherein the subfield data include first and second subfield groups,

wherein a number of the subfields included in the second subfield group is greater than a number of the subfields included in the first subfield group, and

wherein at least one of the subfields, which is used for forming low gray, is included in the second subfield group.

9. A plasma display panel (PDP) image display method comprising:

dividing an image of each frame displayed on a PDP corresponding to an input video signal into a plurality of subfields, each subfield corresponding to a bit that represents one of a plurality of luminance weights, the subfields including first and second subfield groups, and a number of the subfields included in the second subfield group being greater than a number of the subfields included in the first subfield group;

combining the luminance weights of the subfields, and displaying gray,

wherein at least one of the subfields, which is used for forming low gray, is included in the second subfield group, and

wherein light emission centers between the subfield groups are substantially periodically formed regardless of a variation of the load ratio of the input video signal.

10. The PDP image display method of claim 9, wherein the substantially periodical formation of the light emission centers between the subfield groups is realized by making a first time gap between the light emission centers of the first and second subfield groups in a same frame correspond to a second time gap between the light emission centers of the second subfield group and a first subfield group of a next consecutive frame.

11. A plasma display panel (PDP) image display for dividing an image of each frame displayed on a PDP corresponding to an input video signal into a plurality of subfields, combining luminance weights of the subfields, and displaying gray, comprising:

a video signal processor for digitizing the input video signal to generate digital video data;

a vertical frequency detector for analyzing the digital video data output by the video signal processor to determine whether the input video data is an NTSC signal or a PAL signal, establishing a corresponding result as a data switch value, and outputting the data switch value together with the digital video data;

a memory controller for receiving the digital video data and the data switch value, generating subfield data and address data corresponding to one of the NTSC and PAL video signals in accordance with the data switch value, and applying the subfield data and the address data to the PDP, wherein  
5 the subfield data correspond to subfields including first and second subfield groups, a number of subfields included in the second subfield group is greater than a number of subfields included in the first subfield group, and at least one of the subfields, which is used for forming low gray, is included in the second subfield group;

10 an automatic power control (APC) unit for detecting a load ratio of the digital video data output by the vertical frequency detector, calculating an APC level according to the detected load ratio, producing a number of sustain pulses corresponding to the calculated APC level, and outputting the number of sustain pulses;

15 a subfield variable range determination unit for determining a variable range of each subfield according to the load ratio output by the APC unit, and determining a start point of each subfield within the determined variable range; and

a sustain and scan pulse driver for receiving the number of  
20 sustain pulses, and an address pulse width of each subfield, a start position of each subfield, and a data switch value output by the subfield variable range determination unit, classifying as an NTSC video signal case or a PAL video signal case according to the data switch value to generate a subfield arrangement configuration, generating a control signal based on the generated

subfield arrangement, and applying the sustain pulses to the PDP.

12. The PDP image display of claim 11, wherein the start point of the second subfield group in a first case precedes the start point of the second subfield group in a second case, where the load ratio in the first case is greater than the load ratio in the second case.

13. A computer readable storage medium containing a program source for implementation of a plasma display panel (PDP) image display method for dividing an image of each frame displayed on a PDP corresponding to an input video signal into a plurality of subfields, combining luminance weights of the subfields, and displaying gray, the method comprising:

determining whether the input video signal is a PAL signal;

if the input video signal is found to be a PAL signal:

generating subfield data and address data corresponding to the input video signal;

producing a number of sustain pulses based on a load ratio of the input video signal;

determining a start point of each subfield;

generating a control signal for a subfield arrangement configuration based on the number of sustain pulses and the start point of each subfield; and

applying the generated subfield data, the address data, and the control signal for the subfield arrangement configuration to the PDP,

wherein the subfield data include first and second subfield groups,

wherein a number of subfields included in the second subfield group is greater than a number of subfields included in the first subfield group, and

wherein at least one of the subfields, which is used for forming low gray,  
5 is included in the second subfield group.

14. A method of displaying an image corresponding to an input video signal on a plasma display panel (PDP), using a plurality of subfields that are selectively used to form gray of the image, the method comprising:

10 organizing the subfields into first and second subfield groups, each subfield corresponding to a bit that represents one of a plurality of luminance weights, the second subfield group including subfields corresponding to least significant bit (LSB) and LSB+1, respectively; and

forming low gray using the subfields corresponding to the LSB  
15 and LSB+1 in the second subfield group.

15. The method of claim 14, further comprising substantially maintaining a periodicity of light emission centers between the subfield groups.

20 16. The method of claim 15, wherein substantially maintaining the periodicity comprises varying a start time of the second subfield group according to a load ratio of the input video signal.

17. The method of claim 14, wherein the second subfield group

includes a greater number of the subfields than the first subfield group.

18. The method of claim 14, further comprising determining whether the input video signal is a PAL signal, wherein the subfields are  
5 organized into the first and second subfield groups if the input video signal is the PAL signal.

19. The method of claim 14, wherein a first time gap between the first and second subfield groups is substantially the same as a second time gap  
10 between the second subfield group of one frame and the first subfield group of a next consecutive frame.

20. The method of claim 17, further comprising organizing the subfields into a single group if the input video signal is an NTSC signal.

15